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August 29, 2006

Dear National Mathematics Advisory Panelists:

The American Mathematics Association of Two-Year Colleges (AMATYC) is honored to have this opportunity to address this distinguished Panel. AMATYC commends President Bush, Secretary Spellings, and each of you for tackling the serious, difficult, and multi-faceted problem of mathematics education.

Over eleven hundred community, technical, and two-year colleges in the U.S. offer open door admission and unique opportunities for promoting improvement in mathematics education and maximizing student success in mathematics. The following distinctive programs at community colleges serve nearly forty-six percent of all undergraduate students (more than 6.5 million students [NCES 2004 data]:

- Transfer programs to four-year colleges and universities
- Two-year degree programs including highly technical programs
- Training and retraining programs for entry level job skills
- Adult literacy education and extensive developmental education programs

The mathematics educational opportunities available at community colleges are evidenced by the percent of students enrolled in mathematics by course [Source: 2005 Conference Board of the Mathematical Sciences survey]

Mathematics Course	Percent Enrolled
Developmental mathematics (precollege)	57%
Precalculus	19%
Calculus	6%
Statistics	7%
Other mathematics courses*	11%

*Includes courses such as linear algebra, probability, discrete mathematics, finite mathematics, mathematics for liberal arts, and mathematics for elementary school teachers.

Community colleges are uniquely positioned between the K-12 and four-year college sectors, enabling the two-year colleges to respond to and address the following issues in mathematics education:

- Access, equity, and the needs of a diverse student population
- Strategies for addressing mathematics anxiety and negative attitudes towards mathematics
- Quantitative literacy across the curriculum
- Special services such as tutoring and mentoring for mathematics students
- Innovation in the classroom, appropriate use of technology, distance learning, and active student learning

- Teacher preparation
- Students enrolled simultaneously in high school and college (dual enrollment)
- Collaboration among K-16 and business and industry.

Across the nation, many elementary schools teachers complete the mathematics courses required by the university and four-year colleges at community colleges. In Illinois the percentage is seventy percent [Source: Kays, 2001]. This is a challenging role for community colleges given that the mathematics required for these students varies from university to university and state to state. Community colleges also offer the mathematics courses needed for college graduates to receive alternative teacher certification.

AMATYC has spent the last six years reviewing the latest research in how college students learn best and how colleges, departments, and mathematics professionals can best provide the atmosphere for those students to learn. Our document, *Beyond Crossroads: Implementing Mathematics Standards in the First Two Years of College* (www.bc.amatyc.org), to be published in November 2006, emphasizes scientific evidence.

To accomplish the nation's lofty goals, one of which is a high level of quantitative literacy, we must raise our expectations of American students in mathematics.

- Students need a solid foundation in basic algebra, proportional reasoning, critical thinking, statistical reasoning and interpreting displays of data.
- Student scores on placement examinations often demonstrate that students who have met the high school graduation requirements in mathematics have not achieved the mathematical competence they need for success in college or in industry.
- Teachers, parents, and students must realize that mathematics plays an important part in their lives–in the workplace, as consumers, and citizens.

How can AMATYC, two-year college faculty, and the community and technical colleges of the United States assist in achieving these goals? Community colleges offer the following:

- The ability to respond quickly to the needs of their communities.
- The first opportunity for minorities and underrepresented mathematics and science students to begin their education.
- Quick response as providers of services (such as teacher professional development) as a means of implementing local K-12 school plans.
- Professors, with teaching as their major focus, who are constantly working to respond to the needs of the diverse student population.
- The opportunity for students to meet their career goals through different paths.

Solutions to the important issues faced by the Panel cannot be easily determined. We need a national response such as the reaction to Sputnik; there are students in China and India waiting in line for our high skill, high wage jobs. However, any solution in mathematics education must include community college mathematics faculty. We ask that the Panel consider the following actions and initiatives to address the complex challenges in mathematics education today:

- A national quantitative literacy campaign to elevate teacher and parental expectations that all children can learn mathematics and to communicate the need for increased levels of student performance in mathematics. The message that all citizens need to read and

understand mathematics in the media, think logically, understand basic statistics and probability, as well as solve basic algebraic problems in context needs to be communicated and adopted broadly.

- Increased financial support for professional development for all mathematics teachers, K-16. Mathematics teachers need to embrace continuous improvement in their teaching and make a commitment to lifelong learning.
- Increased support to provide opportunities for informed discussions about curriculum design and development between mathematics teachers and teachers of other disciplines, discussions between math teachers in all grades, K-16, and discussions with business and industry. Courses and programs with student learning outcomes that focus on quantitative literacy across the curriculum and workplace skills need to be developed and implemented at all levels.
- Lastly, support for standards-based initiatives like AMATYC's *Beyond Crossroads* document that address implementation strategies to maximize student success in mathematics are necessary. When these strategies are applied properly over adequate time by a teaching professional with a good understanding of mathematics, more of our students will achieve quantitative literacy.

Thank you for the invitation to address the Panel and to the Panel for tackling this problem. The solutions are critical to the future of our nation.

Respectfully,

Kathy Mowers
President, AMATYC